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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/660,386	09/12/2000	Vladislav Vashchenko	NSC1-H1200	6925
33402	7590	06/21/2005	EXAMINER	
LAW OFFICES OF MARK C. PICKERING			NADAV, ORI	
P.O. BOX 300			ART UNIT	
PETALUMA, CA 94953			PAPER NUMBER	
			2811	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/660,386

Applicant(s)

VASHCHENKO ET AL.

Examiner

ori nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9,13-18,20 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9,13-18,20 and 23-30 is/are rejected.
- 7) ☒ Claim(s) 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 9 and 13-20, 23 and 25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Leach (5,640,299).

Regarding claims 16-17 and 23, Leach teaches in figure 18 and related text a device comprising

a semiconductor substrate of a first conductivity type P having a surface,

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a first well region 131 of a second conductivity type N disposed in the semiconductor substrate,

a second well region 133 of the second conductivity type disposed in the semiconductor and being spaced apart from the first well,

a first contact region P+ 143 of the first conductivity type disposed in the first well,

a second contact region N+ 141 of the second conductivity type disposed in the first well and being electrically connected to the first contact region to have a same potential,

a first trigger region N+ 145 of the second conductivity type disposed in the first well region and spaced apart from the first and second contact regions,

a third contact region P+ 149 of the first conductivity type disposed in the second well region,

a fourth contact region N+ 147 of the second conductivity type disposed in the second well region and being electrically connected to the third contact region to have a same potential,

a second trigger region N+ 151 of the second conductivity type disposed in the second well region and spaced apart from the third and fourth contact regions,

a separation region of the semiconductor material (the region comprising the P substrate and part of the N- well 133 formed in the substrate and located left to the second trigger region 151) located only between the first and second trigger regions, the separation region contacting the surface, the first trigger region, and the second trigger region; and

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a device region that overlies and contacts the surface at a location where the separation region contacts the surface between the first and second trigger regions, the device region at the location being free of a gate, and not lying below a gate.

the first and second trigger regions adjoin the semiconductor material.

Regarding claim 18, Leach teaches in figure 18 the dopant concentrations of the first and second trigger regions are greater than the dopant concentrations of the first well region and the second well region, respectively.

Regarding claims 13-14 and 25-26, the claimed limitations of a device wherein during first and second ESD events, first and third potentials on the first and second, and third and fourth, contact regions are greater than second and fourth potentials on the third and fourth, and first and second contact regions, respectively, are inherent in prior art's device.

Regarding claims 15 and 30, Leach teaches a semiconductor material has a top surface; the first and second wells have side surfaces that contacts the top surfaces, and bottom surfaces that contacts the side surfaces; and the first and second trigger regions are spaced apart from the bottom surfaces.

Regarding claims 20 and 29, by considering the first trigger region to be 151 and the second trigger region 145, then Leach teaches in figure 18 the first trigger region is not

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directly electrically connected to the third contact region and the second trigger region is not directly electrically connected to the first contact region.

Regarding claims 27-28, Leach teaches in figure 18 a first/second trigger region contacts the semiconductor region along a third/fourth interface, a dopant concentration of the first/second trigger region adjacent to the third/fourth interface being substantially equal to the dopant concentration of the first/second trigger region adjacent to the first/second interface.

Claims 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Koizumi et al. (5,994,741).

Koizumi et al. teach in figure 1 and related text a device comprising
a semiconductor substrate of a first conductivity type P having a surface,
a first well region 12 of a second conductivity type N disposed in the
semiconductor substrate,

a second well region 14 of the second conductivity type disposed in the
semiconductor and being spaced apart from the first well,

a first contact region P+ 20-2 of the first conductivity type disposed in the first
well,

a second contact region N+ 24-1 of the second conductivity type disposed in the
first well and being electrically connected to the first contact region to have a same
potential,

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a first trigger region N+ 24-2 of the second conductivity type disposed in the first well region and spaced apart from the first and second contact regions,

a third contact region P+ 20-4 of the first conductivity type disposed in the second well region,

a fourth contact region N+ 24-4 of the second conductivity type disposed in the second well region and being electrically connected to the third contact region to have a same potential,

a second trigger region N+ 24-3 of the second conductivity type disposed in the second well region and spaced apart from the third and fourth contact regions,

a separation region of the semiconductor material (the region comprising the P substrate and part of the N- wells formed in the substrate and located left/right to the second/first trigger regions) located only between the first and second trigger regions, the separation region contacting the surface, the first trigger region, and the second trigger region; and

a device region that overlies and contacts the surface at a location where the separation region contacts the surface between the first and second trigger regions, the device region at the location being free of a gate, and not lying below a gate,

wherein no region of the first conductivity type lies between any part of the first and second trigger regions.

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Allowable Subject Matter

Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 9 and 13-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A-B are cited as being related to ESD devices.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

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Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**.

A handwritten signature in black ink, appearing to read 'Ori Nadav', is positioned above the printed name and title.

O.N.
June 15, 2005

ORI NADAV
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800